

THE TYPE AND FIGURED COLLECTION (EXCLUDING PLANT FOSSILS) IN THE PALAEOLOGY SECTION OF THE AUSTRALIAN MUSEUM, WITH SPECIAL REFERENCE TO VERTEBRATES.

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ABSTRACT

The Australian Museum type fossil collection is an important resource to palaeontology. It has recently been enlarged by the incorporation of other type collections from universities within New South Wales. The Australian Museum aims to fulfil its obligations as recommended by the International Commission on Zoological Nomenclature (ICZN) and maintain its position as an important part of Australia's natural heritage.

KEYWORDS: Type specimens, fossils, Australian Museum.

INTRODUCTION

The importance of type collections cannot be overstated, since they are the foundations of the taxonomic framework into which the great diversity of living and extinct organisms are classified. This importance was most succinctly put by Bruton (1979) who stated that:

“A type specimen is an object whose scientific value is incalculable and its loss to science a disaster.”

Following on therefore, no cost or effort should be spared in housing these specimens in a secure place with proper professional care and maintenance by trained and dedicated curatorial staff. Students and researchers should keep in mind the importance of the specimens that they describe and/or figure and make certain that they also understand their responsibilities in caring for types and potential types. They should make sure that accurate and detailed documentation accompanies proposed types and that they are deposited in a recognised type collection where they can be adequately housed in perpetuity.

DESCRIPTION OF COLLECTION

Most of the early type fossil material from Australia was described overseas, where it usu-

ally remained. For example, Pleistocene megafauna was described in various works by Owen (e.g. 1877) in Britain, while Palaeozoic invertebrates were described by Dana (1849) in the USA and by de Koninck (1876-77, 1898) in Belgium. De Koninck returned the described specimens to their collector, W.B. Clarke, but they were destroyed in the Garden Palace fire in Sydney on the 22nd September 1882. In many cases replicas of specimens were lodged with the Australian Museum, but these are not as good as the originals.

Until about 1986, type specimens in the Australian Museum were housed in the general collection, within the taxonomic and chronological framework around which that collection is structured. For security reasons, and to facilitate ease of access to this most important part of the collection, a decision was made to house the types separately in their own area with better security and added protection of automatic gas and water fire-fighting systems. At about this time a decision was made to encourage other holders of type specimens in New South Wales (NSW) to deposit their collections with the Museum. The situations in university geology departments were such that they were not able to guarantee a commitment to collections, especially with the current economic trends and bleak outlook for the immediate future. All the universities in the state have now transferred, or

are in the process of transferring, their type collections to the Australian Museum, resulting in a massive increase in the size of the collection. Palaeontologists intending to describe or figure material originating from NSW are encouraged to obtain Australian Museum (AMF) specimen numbers. The following universities have transferred their type fossils to the Australian Museum, and no longer issue numbers for type specimens:

- 1) University of Sydney Department of Geology and Geophysics. Specimen number prefix USGD or SUP.
- 2) University of New England Department of Geology. Specimen number prefix UNEF.
- 3) Newcastle University Department of Geology. Specimen number prefix NUF.

These type specimens have been, or are in the process of being, re-registered with AMF numbers, and lists of corresponding obsolete numbers have been prepared or are in the process of preparation. The only other recognised type fossil collection in the state at this time is that held by the Geological Survey of NSW. On occasion in the past, parts of the Mining Museum's (Geological Survey) fossil collection, including types, were transferred to the Australian Museum. Some still bear the original MF prefix number of their original accession.

The Australian Museum type collection is stored in chronological order of the date of the first published description of a specimen. This method is copied from the University Palaeontological Museum in Oslo where it has been in use for around sixty years (Bruton 1979). Specimens are stored in acquisition order, which means that storage capacity need only be added at the active end. This obviates unnecessary handling of the collection every time additional storage capacity is added. An individual specimen can easily be located using an index of authors' names and dates of publication. Type fossil thin-sections, housed separately in slide storage-cabinets, are also registered separately with an AM (rather than AMF) prefix. The majority of these specimens are sections of corals and bryozoans. Hand-specimens from which these sections were cut are in the general type collection. Large numbers of thin-sections from the universities have yet to be incorporated into the Australian Museum collection and a large amount of work remains to be done before an inventory, and then a computer data-base, is established for the type thin-sections.

During early 1990, Mr G. Hunt, a most capable volunteer, completed an inventory of the collection. This provides an accurate account of the material held by the Museum at the present time and gives an indication of what may be missing in respect of the previous type list. The up-dated inventory is held on manual file cards, indexed by specimen name and phylum.

The completion of an inventory was essential because of the growth of the collection with the recent addition of type material from other institutions, and also because the information in the previously published catalogue (Fletcher 1971) is over 20 years old. It is hoped that a new catalogue can be published soon, in partial fulfillment of our duty to the world palaeontological community, as set out in recommendation 72D of the International Code of Zoological Nomenclature (Ride *et al.* 1985) which states that:

"Every institution in which name bearing types are deposited should

- (1) ensure that all are clearly marked so that they will be unmistakably recognised as name bearing types;
- (2) take all necessary steps for their safe preservation;
- (3) make them accessible for study;
- (4) publish lists of name bearing types in its possession or custody; and
- (5) so far as possible, communicate information concerning name bearing types when requested by zoologists."

Now that an inventory has been completed, information from cards is being transferred to a computerised data-base to allow more efficient management of the collection, easier access to information, the production of indexes of various kinds, and ultimately the publication of a new, updated type list. About five years ago approximately two thirds of the type catalogue was entered into a computer data-base on a CP/M system. Since that time, the Museum has been using IBM-compatible computers, with "Titan" software for collection data-bases. The original files which were on a CP/M system have been transferred to an IBM-compatible PC, presently running text-based information retrieval software, and data entry has recommenced. These

files may ultimately be transferred to "Titan" or other data-base software when a dedicated collection management computer becomes available, hopefully in the near future. In the meantime this temporary system will allow manipulation of the data and production of required indexes.

As of June 1990 the number of type specimens, excluding plant fossils and thin-sections, stood at 6,800 (Table 1). Plant-fossil types, housed in the plant fossil collection, number 740. Of the non-plant types, the largest proportion (5982) originate in NSW, which is to be expected. Vertebrate types account for 777 specimens, or approximately 10%, of the total (Table 1).

Over one third of the vertebrate types are fish fossils, and there are a large number of some extremely important specimens from world class localities in NSW, particularly the Triassic Beacon Hill quarry at Brookvale, the railway ballast quarry at Gosford, and the Jurassic Talbragar Fish Beds near Gulgong. Reptiles comprise a large proportion of vertebrate types and the largest number are fossils of the horned tortoise, *Meiolania platyceps* Owen 1886, from Lord Howe Island. Indeed, the Australian Museum holds the largest and most comprehensive collection of *Meiolania* in the world, both types and others. Another interesting assemblage of reptiles is the opalised remains of plesiosaurs from White Cliffs, collected late last century and early this century, and described by Etheridge (1897, 1904). While the Museum holds quite a large collection of opalised material, not a great deal is type material. The Museum also holds some important *Megalania prisca* Owen 1858 (giant varanid) specimens from Kings Creek, Darling Downs, which were used some years ago at the Museum of Victoria to make skeletal reconstructions of the animals now on display in the Museum of Victoria and in the Queensland Museum. Only one bird specimen is worthy of note and that is the Miocene owl-nightjar, *Quipolornis kouberi* Rich and MeEvey, 1977, from diatomaceous earth deposits at Bugaldi near Coonabarrabran.

Mammals make up nearly half the total vertebrates, with by far the greatest proportion being marsupials, as should be expected. The majority of mammal discoveries in Australia, over the past 20 or so years, have been made outside NSW. This means that the collection contains only a small number of recent discoveries, but a large amount of material described in the early part of

the century and before. The single most important fossil mammal specimen is the monotreme, and platypus ancestor, *Steropodon galvani*, Archer *et al.*, 1985, from Lightning Ridge. This superbly preserved opalised jaw fragment with three molar teeth was discovered in the Galman collection in late 1984. Its recognition as a monotreme pushed back the known history of mammals in Australia by about 70 million years, to the early Cretaceous when dinosaurs flourished across the land.

The Wellington Caves feature prominently as a fossil locality from NSW Wombeyan and Jenolan Caves, Myall Creek, Bingara, and the Bow road cutting are other important NSW sources, while the Darling Downs area of Queensland is also well represented. Significant specimens include the holotype skull of the zygomatic diprotodontid *Zygomaturus trilobus* Macleay 1858 and the pygmy possum *Burramys parvus* Broom 1896. A significant collection of types from various localities on the island of New Guinea are also held at the Museum. Recently described diprotodontids from Papua New Guinea (PNG) and Irian Jaya, such as, the pygmy zygomatic *Hulitherium tomasetti* Flannery and Plane 1986, have been deposited as casts or originals, and reflect renewed interest in the extinct marsupial fauna of New Guinea. New localities are being found in both PNG and Irian Jaya and as yet there is no adequate repository for these specimens in PNG. The placental mammals are dominated by rodents, but also include the Shea's Creek dugong and various mentioned and figured dingo specimens.

The mammal section of the type collection does not contain a large number of holotype specimens; as already mentioned, many of the earlier discoveries were initially described overseas (mainly at the British Museum (Natural History)) where these holotypes still remain. The Museum has plaster casts of many of these holotypes, some of which are in poor condition. In some instances the casts are housed in the type collection. Over the last decade there has been increased activity in vertebrate palaeontology as a result of the growth of the University of New South Wales vertebrate palaeontology group, and a slightly larger proportion of holotypes and paratypes exist from this time. However, with the University of NSW group now concentrating on Queensland sites, the pace of acquisition may slow again.

Table 1. Breakdown of Australian Museum type fossils (not plants) by group and state of origin. As at June 1990. Os = overseas.

Group	Total	NSW	Vict.	Tas.	Qld	SA	WA	NT	OS
ARTHROPODA									
Miscellaneous	61	57	3		1				
Insecta	542	520	1		18		3		
Merostomata	5	5							
Trilobita	1067	1049	3	2	9			3	1
BRACHIOPODA	1841	1638		91	32		51	6	23
BRYOZOA	412	375		14	7		16		
CNIDARIA									
Anthozoa	457	407	15	3	27		4		1
Stromatoporoidea	1	1							
CONULARIDA	6	6							
ECHINODERMATA									
Astroidea	8	7	1						
Crinoidea	139	134			3		2		
Echinoidea	12	10	1				1		
GRAPTOLITHINA	232	232							
MOLLUSCA									
Bivalvia	670	598	1	9	36	15	6	8	6
Cephalopoda	264	64			44	10	24	118	4
Gastropoda	215	184	13	5	7	6			
Monoplacophora	12				5	7			
Rostroconcha	21	17							4
Scaphopoda	2	2							
Amphineura	3	3							
TENTACULITIDA	8	8							
MISCELLANEOUS INVERTEBRATES	12	8				4			
ICHTHOFOSSILS	33	19	2			2		7	3
PISCES	316	299			1				16
AMPHIBIA	6	5							1
REPTILIA	111	96			9				6
AVES	5	5							
MAMMALIA									
Monotremata	13	10			1		2		
Marsupialia	294	192		1	39	8			54
Placentalia	32	31							1
TOTAL VERTEBRATES	777	638		1	50	8	2	78	
TOTAL ALL	6800	5982	40	125	239	52	109	142	120
PLANTS	740								
						(not surveyed, stored separately)			
GRAND TOTAL	7540								

CONCLUSIONS

The type and figured collection at the Australian Museum comprises nearly 10% of all fossil registrations, but the actual number of primary types is not remarkable. The collection is expected to continue to grow at a faster rate than

before the incorporation of the university types, and it will always have priority in collection management over the general collection, in order to enable the Museum to fulfil its role as the responsible institution in New South Wales entrusted with the keeping and preservation of type specimens.

The Australian Museum type fossil collection is an extremely important resource that is available to the worldwide palaeontological community. The recent work done on this collection makes the material even more readily accessible and thus enhances its status as an important part of Australia's natural heritage.

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